II.—*Notice of Saurian Dermal Plates from the Wealden of the Isle of Wight.* By John Edward Lee*.

[With a Plate.]

It is well known that the chief interest of the Wealden formation arises from the number of its saurian remains. Few beds contain so many genera, and at no other geological period did there exist reptiles of such enormous magnitude. The distribution of these fossils is in general extremely local, and they seldom occur in any other form than as detached bones.

All these circumstances render the determination of any new remains a matter of difficulty; and this remark applies very forcibly to three fossils which were found in the Hastings sands of Sandown Bay in the Isle of Wight, and which evidently appear to be the dermal plates of some of the saurians found in this formation.

The first and most perfect of the three is represented of the natural size in the annexed plate (Plate I. *C.*): it is of an irregularly oval shape. In the centre of the upper side is a deep oval depression, within which is a prominence rising gradually to the summit, which is eccentric. The space around the depressed part is slightly concave and is intersected by deep furrows, which are so arranged that the whole of this space might be said to consist of a number of obscurely pentagonal or hexagonal prominences, the surfaces of which are flattened and in some cases slightly concave. The lower side of the scale is convex. A general idea of the proportion may perhaps be better obtained by the lower figure, which represents a section from *a* to *b*. The fibrous bony structure is very apparent at the sides of both this scale and that next to be described, and the whole surface of both of them is covered with small pores, some of which, particularly on the central prominence, run together and form minute furrows.

The second scale is more irregular in its form, but the general characters are so similar to those of the former, that it most probably belonged to an animal of the same species. There is the same central depression, the same prominence within it, and the outer space is divided in a similar manner by furrows, but all these characters are far more obscure than in the other: the form also is not oval, but approaches to a

* The substance of the following paper was forwarded some time ago for insertion in the 'Ann. of Nat. Hist.,' together with drawings of the two scales first described. Unfortunately, however, the paper, drawings, and the two fossils themselves were lost in a hackney-coach on their way to Mr. Sowerby. A drawing of the most interesting scale has, however, been preserved in the hands of Mr. Charlesworth, who kindly returned it for the sake of illustrating the present notice.

square with one or two of the corners broken off, and both the upper and under sides are nearly flat and parallel.

The third dermal plate is not sufficiently perfect to admit of a drawing, but the characters, as far as they can be distinguished, are rather different from those of the other two. Like the first, the figure is oval and the under side convex, but the upper side is chiefly occupied with three ridges, rising gradually from the circumference to an eccentric summit. There is not the same appearance of porosity as on the surfaces of the other two, but the structure is decidedly bony. The general appearance bears some resemblance, on a large scale, to the plates which ornament the head of the recent Iguana, and it is only to be regretted that a specimen of this nature had not been secured before it became water-worn, as it might have afforded another link to connect the Iguanodon with the recent Iguana.

With respect to the other two scales, there do not appear to be any characters to connect them with the Iguanodon by a comparison with the living Iguana. The common Crocodile is furnished with large and strong plates, which in some parts of the body are oval; but, as far as I am aware, neither the scales of the crocodile nor those of any other recent reptile have exactly the same characters as the fossil plates.

But little assistance can be derived in their determination from the associated fossils. In the same locality were found the teeth of the Crocodile and the Iguanodon, and gigantic bones which have usually been considered as those of the latter saurian. One vertebra from Sandown Bay weighs above 14 lbs., and a portion of one of the bones of the leg is 26 inches in length. In the same formation, at Brixton Bay, the bones are still more gigantic: the upper part of a femur was obtained there, which measures 13 inches from the outer side of the head to the point of the trochanter. Fragments of bones of these dimensions are not uncommon in the Isle of Wight, so that it appears singular, if these scales belonged to the Iguanodon, that they should not have been before noticed; besides which, there is nothing like them in the covering of the recent Iguana, and they appear almost too small for a saurian of the size of the Iguanodon. Again, if we consider them as the scales of the Wealden Crocodile, the analogy with the recent animal certainly in a measure favours the idea; but still the question may very naturally be asked,—what has become of the scales of all the crocodiles from which the innumerable teeth in the Sussex beds are derived? None but those who have personally examined these beds can have any idea of the immense number of teeth and bones which they contain: it

cannot be argued that they have perished, for the most delicate bones are preserved, as well as the finest scales of the Lepisosteus; so that, to say the least, there certainly appears to be a difficulty in referring them to the Crocodile.

There are other genera the remains of which are found in the Wealden formation, but very little is known respecting them, and it would be little better than conjecture to refer the scales in question to the Megalosaurus or the Phytosaurus, because there were difficulties in referring them to the Crocodile or the Iguanodon. Before long it may be hoped that other specimens will be found under more favourable circumstances with respect to their determination.

III.—*On the Discovery of the Remains of a* Mastodontoid Pachyderm *in Australia.* By Prof. Owen, F.R.S.

To the Editors of the Annals of Natural History.

Gentlemen,

I have lately received a letter, dated April 6, 1842, from Sir Thomas Livingstone Mitchell, Surveyor-General of Australia, in which he announces the interesting discovery of large fossil mammalian remains in that continent. The specimens from the bone-caves in Wellington Valley, described in the second volume of Sir Thomas's work on Australia, were, it may be remembered, remains of extinct species of marsupial genera now existing in that continent, and of a genus very nearly allied to the existing ones; the largest fossil, which had been supposed to belong to a Hippopotamus or Dugong, indicating rather an extinct gigantic Phascolome; and there was not any conclusive evidence of a genus of placental mammal in that collection*.

The fossils, which my friend has now transmitted, incontestably establish the former existence of a huge proboscidian Pachyderm in the Australian continent, referable to either the genus *Mastodon* or *Dinotherium*. These fossils consist of a portion of a molar tooth, and of the shaft of a femur with part of the spine of a scapula, and some smaller fragments of a long bone. Sir Thomas states, "these are not satisfactory specimens such as I hope soon to send you, but being the first from the locality, I am anxious you should first hear of them. I can tell you but little of the manner in which they occur; but such bones are found on the Darling Downs—those extensive plains which you will see marked to the S.W. of Moreton Bay on most maps of this country. They are at the

* Mr. Pentland informs me that a bone of a large quadruped, apparently a pachyderm, from the Wellington Valley, is, he believes, in the Museum at Paris.